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ABSTRACT

This brochure presents some classroom problems which have been solved by college instructors through the use of nonprint materials. There is a discussion on how to determine when and how nonprint media could be used during a course. Five questions are asked which help instructors select the type of nonprint materials they should use to harmonize with their style of teaching. Suggestions are made for finding and evaluating nonprint media, and a brief list of books to help plan the use of nonprint materials is provided. The last section contains a short description of each of the following: overhead transparencies, slides, filmstrips, records, audiotapes, 16mm films, Super 8mm films, and videotapes. (JAB)

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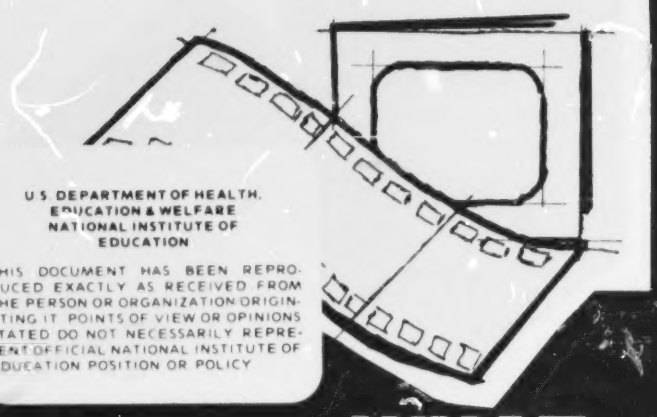

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WHAT NONPRINT MATERIALS CAN DO FOR YOU IN COLLEGE TEACHING

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What Nonprint Materials Can Do For You

In College Teaching

by Marjorie Hoachlander

Images and sounds in a variety of forms are more available and easier to present for learning than ever before. Many reinforce the textbook; others interact with or match the content. How do these other-than-print materials fit into your professional goals? Into your teaching methods? Into your students way of learning?

Only you can find the answers to these questions; the aim of this pamphlet is to help you do so.

We'll be exploring images and sounds that can be comfortably used by you and your students as an integral part of instruction. Each of these media will be described later, but let's begin with two definitive conditions:

- If print is included with the subject matter offered, it will be only in a adjunct form, as a study guide, or a manual for operating the related equipment.
- If the equipment requires more than an electrical outlet, an extension cord, a screen or a television set, that kind of media is beyond the scope of our discussion.

A look at how some of your colleagues have used these nonprint materials to solve classroom problems may suggest your own answers.

• A problem for introductory English students is their lack of familiarity with goals of creative writers.

An innovative professor solved the problem by asking his students to match the meaning and mood of a poem by creating a sequence of slides or a tape of musical excerpts. These nonverbal enrichments help the class understand the poem as communication.

• A problem for students in a history course is overcoming the limitations of their own place and time as they try to understand the events of the past.

To help students solve this problem, a researcher at the Ontario Institute for Studies in Education came up with a diversified package on the Age of the Great Depression. The completely unstructured multimedia kit, designed

for use by about 25 students, weighs 12 pounds and includes 9 records, 22 color slides, 4 black and white filmstrips, 1 60-minute audio tape, and a large assortment of posters, newspaper pages, pamphlets, postage stamps, recipes, blueprints, postcards, and reproductions of paintings. The box is designed to promote student interaction with course content.

• A problem for students in the introductory speech/communication course is trying to learn about nonverbal communication through the medium of a textbook.

Many professors have solved this problem by supplementing that unit of the course with films. The highly visual medium of film can show body language being used in a variety of social situations. Films can teach nonverbal material in a way that not even an illustrated textbook can match.

• A problem for developmental math students is that each student enters with a different skill level in arithmetic. A related factor is that many students not proficient in math are also poor readers.

An audiovisual learning system provides an opportunity for each student to start where he *is* in arithmetic, proceed at his own pace, and complete his course on his own schedule. It also allows the student and the teacher to prescribe a course especially for that student's needs. Audiovisual presentations help to overcome the student's reading problem; at the same time, achievement in arithmetic is encouraged.

• A problem for medical students is the need for individual self-paced review of the materials presented in the classroom.

Michigan State's medical school solved the problem through its learning laboratory. It provides groups of four students with a learning carrel equipped with a slide projector, a color television monitor, a Super-8 film loop projector, a cassette audio-tape playback machine, a microfilm reader, a microscope, headphones, and an audiostrip. The unit offers self-instructional opportunities for maximum reinforcement of class work.

You can select, adapt, combine or create the media to do any or all of the following:

- Demonstrate a phenomenon or technique
- Show a process
- Motivate or create empathy
- Simulate a behavior
- Substitute a behavior
- Illustrate a concept or philosophy
- Provoke a debate or discussion
- Encourage independent learning
- Deliver basic instruction

The majority of materials available to you have been created and/or designed by your colleagues. They are professionals who have become aware that the "projectibles" and the "audibles" can add a new, powerful quality to college teaching without diminishing the contribution of the individual professor. These faculty members have found that nonprint media could assist them in imparting increasingly specialized knowledge even as teaching loads and learning environments become more difficult to cope with. And so they developed strategies for combining images and sounds with the book, the blackboard, and the lectern. Much of their work displays a level of creative mastery found previously only in recreational use of media.

These new instructional materials began with a consideration of the audience. As most of us have been discovering, students have changed considerably in recent years. The film *Children of Media* (The Center for Understanding Media, 1972) views them this way:

> The kids we teach today are citizens of two worlds. They live in traditional structures of school, family, and cultural values, but they also inhabit a new world of the moving image: of film, TV and instant information. Our work is to bring these two worlds together, to provide them with new sets of critical and creative competencies so that they can handle the media that shapes their worlds.

In the students' personal learning experience, there is no fine line drawn between print and nonprint. There is, instead, a spontaneous, interactive acceptance of all kinds of media, depending upon need and circumstance. For example, they may have learned about the 1976 Presidential election in a variety of ways: reading a weekly news magazine; scanning a daily paper; listening to the morning news on the radio; watching the debates on television; attending a lecture; seeing a documentary film; talking at

first hand to local campaign workers. Each of these methods of obtaining information reinforces and enriches the others, in a cycle of learning participation. Just as the media evolve through this process of dynamic interdependence, so does the understanding of the audience.

Taking a look at what is happening in our homes is an even stronger persuasion to wider use of the media in college teaching than any formal research finding. Today there is an attitude of ease and practicality toward television, film, and radio that is not unlike the way most of us feel about a household appliance: If it is easy to operate, can do the job and save valuable time, we plug it in and use it. It has become our way of life—expecting information to be available in various forms, then choosing the source that meets our needs and is convenient to use at a given time and place.

It is being recognized by many colleges that a new kind of voluntary orchestration of teaching is needed to clarify the underlying theme of cognitive preference which these behavioral changes bring to the process of education. New methods are needed to help students achieve the objectives they and their professors have chosen. That means you are finding your own new ways to present required subject matter in forms that will succeed with students who have diverse backgrounds, dissimilar abilities and, more often than not, demanding work/study schedules. It means you are accommodating to the fact that the average student now attending college is well past the age of twenty-five. The more mature and professionally occupied the student, the more welcome the teaching strategies that offer a variety of student-elected options for acquiring and reinforcing knowledge.

Essentially, then, it's all a matter of how you decide to use these additional tools for the encouragement of learning.

WHEN AND HOW TO USE NONPRINT MEDIA IN YOUR CLASSROOM

First, identify those sections in your course of study where learning is not occurring to your satisfaction.

You know better than anyone else where and when class discussions were murky, attendance dropped, and answers on quizzes were largely unacceptable. What happened?

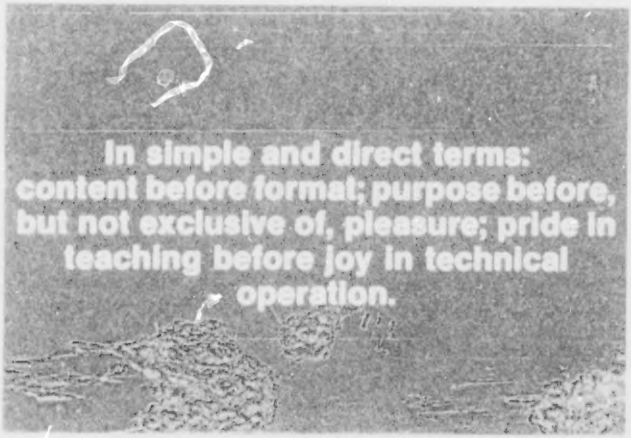
If you find that certain reading assignments or lectures consistently failed to work as you had intended, consider whether the subject matter could be more effectively presented by other means. Once these areas are identified, isolate them for analysis. Here are some things to consider:

- Does the information need to be updated? If so, what is the most recent source?
- Is the information to be presented task-oriented or conceptual?
- Does the content need more illustration? If so, should it be visual or auditory?
- Would listening be more helpful than reading or viewing?
- Is it essential that the subject matter be the same, regardless of format chosen?
- Should students receive this alternative experience in a group or individually? In class, in a library or somewhere in the community?

Note that the situation demands further discrimination.

If the material or device you wish to locate provides content of superior or academically acceptable quality OR if the content is of a kind that cannot be presented as effectively in any other form, this should be the main reason for deciding upon it. It is far more likely to fit into your teaching plan than a technically perfect production, available on the latest playback/projection model.

In selecting nonprint material, the content objectives should determine the choice of format, rather than the other way around. In general, if the subject matter you prefer is available for showing *only* on a certain type of projector, let the content determine the equipment!


In simple and direct terms:
content before format; purpose before,
but not exclusive of, pleasure; pride in
teaching before joy in technical
operation.

Learn all you can about the kinds of assistance your school is prepared to give you and make the most of it.

The rate at which your content analysis will be transposed to a practical instructional design will depend largely on how resources are organized where you teach and how much professional help is available to you. In some schools, it will be necessary to explore and manage on your own, for the most part. In others, you will engage in a collaborative effort that involves a team of curriculum and media specialists. In this case, activity on behalf of your particular course will be included in related developmental efforts. This is more apt to happen in schools already committed to mediated systems of instruction.

Regardless of the scope of service available to you, it would be to your advantage to first check out the suggestions on media utilization included after each study unit in many of the textbooks you use. Most publishers provide detailed information for your referral, particularly when an instructor's edition is supplied. Add these ideas to your inquiry notes to create a useful working file for planning.

If resource personnel are available to you, a memorandum about your plans for revision may be sent immediately to the instructional designer, media specialist, or head librarian.

Request a conference for a full review of available resources. A systematic approach will usually produce a prompt and helpful reply; if you arrive with a firm assessment of your needs as well as some preliminary decisions about the kinds of material you wish to include, you will be pleased by the response you get.

ASK YOURSELF THESE QUESTIONS AS YOU CONSIDER WHICH NONPRINT MATERIALS TO USE

How do I prefer to teach with other-than-print media?

"It's a form of self-archaeology," a colleague once remarked. You may be so accustomed to asking questions of others than yourself that you'll have a little trouble with this. To know which kinds of media are most compatible with your personal style of teaching will cut down on frustration as you search and select later on.

Do I want to control the presentation or do I prefer to have someone else do it?

There are numerous advantages in the new capabilities of projectors and players. You can present a complete program or a segment of it, depending on time and purpose. The content can be included as part of your lecture, provided the equipment is conveniently placed to be used at will. These new devices give you an easy, informal situational control. However, you should know the content well and decide in advance how it is to be shown. If you prefer to have someone else do it, you might ask a student to collaborate with you in the presentation.

How do I ordinarily use media in the classroom?

As the delivery system for basic instruction? To stimulate discussion early in the course? To support controversial lectures that provoke student thought? To supplement selected readings? As a way to get to know students better? You will want to find the materials that amplify your teaching practices and support your unique strategies.

Do I feel comfortable sharing the class by a presentation showing another professor?

Perhaps it vitalizes your own knowledge and sparks a class debate about factual accuracy or contrary beliefs. It may also redefine your role as the focal point of instruction and allow you instead, to lecture on topics that draw on your specialty.

During my own student experience, what subject matter was made clearer to me through the use of nonprint materials?

It is often said that we teach as we were taught. We seem to forget that most nonprint materials presented to us in earlier years were labelled, overtly or otherwise, as "enrichments" or "supplements" to the course. Think back: wasn't there a learning experience with film somewhere after which you said "Nobody taught me, the movie did."?

If this process has been satisfactory, you will want to know how to find appropriate materials for your academic discipline.

SEARCHING FOR NONPRINT THAT WORKS

Finding and evaluating nonprint materials can be difficult. You may be tempted to consider "doing it yourself". But remember that it takes at least five hours to produce, test, and revise a finished minute of content. You'll spend less time and energy if you search for prepared materials.

There follows a list of publications, people, and organizations, dedicated to aid you in your search. The *Educational Media Yearbook*, edited by James W. Brown and published by R.R. Bowker, is a concise overview and handbook of major sources, organizations, activities, and developments in educational media.

Two major organizations that can provide highly specific information in response to your requests are the Educational Resources Information Center (ERIC) and the National Information Center for Educational Media (NICEM). There are other agencies that will assist you in finding out more about nonprint media. Some require a membership fee for their services; others will respond to a letter of request from any interested professional. Do, however, use the letterhead of your institution to substantiate your affiliation as well as your request.

ERIC is a network of clearinghouses. Each is specialized, either in a specific curriculum area, such as reading and communication skills, or in topics such as educational methods and management. Information about the use, development, and effectiveness of nonprint materials and instructional strategies can be supplied. Specific media will often be referred to, but may not represent a comprehensive listing or evaluation. Inquiries to ERIC should be based on the *Thesaurus of ERIC Descriptors*. There are some 30 regional centers with direct access to ERIC. Initial inquiries should be directed to ERIC Central, National Institute of Education, 1200 19th Street, N.W., Washington, D.C. 20208 (202-254-5470).

NICEM catalogs and disseminates information about nonbook educational media. Well over a quarter million titles are already listed, and approximately 3,000 new ones are added each month. NICEM publishes several comprehensive indexes of media by subject and format. NICEM will also respond to your request for information on available media in your specific field of interest and format of choice. NICEM does not evaluate media, but does give essential information such as intended level, brief description of content, length, year of release, and source. NICEM headquarters are at The University of Southern California, University Park, California 90007 (213-746-6681), and direct access through terminals is now being established.

Both NICEM and ERIC make nominal charges for their services.

Representatives of publishers and producers can also be helpful. Arrange meetings with them when you have time to give full attention to your needs.

As you plan your use of nonprint materials, you might find some of the following books helpful.

Armsey, James W., and Norman C. Dahl, *An Inquiry into the Uses of Instructional Technology: A Ford Foundation Report.* New York: The Ford Foundation, 1973. (113 pp.)

Ashby, Edward, *Adapting Universities to a Technological Society.* San Francisco: Jossey-Bass Publishers, 1974. (126 pp.)

Briggs, Leslie J., *Handbook of Procedures for the Design of Instruction.* Pittsburgh, Pa.: American Institutes for Research, 1970. (206 pp.)

Davies, Ivor K., *Competency Based Learning: Technology, Management and Design.* New York: McGraw-Hill Book Company, 1970. (256 pp.)

Gagne, Robert M., and Leslie J. Briggs, *Principles of Instructional Design.* New York: Holt, Rinehart and Winston, 1974. (270 pp.)

Johnston, James M., ed., *Behavior Research and Technology in Higher Education.* Springfield, Illinois: Charles C. Thomas, Publishers, 1975. (517 pp.)

MacKenzie, Norman, Michael Eraut, and Hywel C. Jones, *Teaching and Learning: An Introduction to Methods and Resources in Higher Education* Paris: UNESCO and International Association of Universities, 1970. (209 pp.)

Peterson, Gary, ed., *The Learning Center: A Sphere for Non-Traditional Approaches to Education.* Hamden, Conn.: Linnet Books, 1975. (146 pp.)

Postlethwait, S.N., J. Novak, and H. Murray, *The Audio-tutorial Approach to Learning,* 2nd ed. Minneapolis: Burgess Publishing Company, 1974. (150 pp.)

Once you find something that fits your course of study, you will want practical information about how it relates to the equipment you will be using to present it.

Overhead Transparencies — **are 8" x 10" sheets of transparent acetate that can be projected from an illuminated platform.**

Transparencies are often prepared in a series of overlays, so that a visual example can be "built" in stages during presentation. They can be colored with grease pencils or water-soluble felt-tip pens to emphasize key information. When placed on an illuminated platform, images from the sheets can be projected over the instructor's shoulder so that eye contact is maintained with the audience. A big picture can be shown on a screen from a relatively short distance. In many classrooms, the overhead projector can be used without dimming the light. To avoid extreme distortion of the projected image, make sure that the angle of the screen is as close as possible to the angle of the projected image.

An overhead projector cannot show photographs or other nontransparent materials. These and small three-dimensional objects can be shown with opaque projectors.

Slides — **are still photographic transparencies on film, mounted on cardboard, plastic, or glass frames. They usually measure 2" x 2". They can be used in conjunction with recorded sound on a special audiocassette player.**

All 2" x 2" slides will work in any slide projector designed for that size, provided only that they are in the correct tray or container for the brand of projector you have. Transferring slides from one kind of tray to another is easy; numbering the slides will make spills less traumatic.

Slides are the most readily available and flexible of the nonprint media. You have complete control over the sequence and the timing. Your own narration for a slide sequence can be easily recorded on a special audiocassette recorder/player that can be attached to many slide projectors. Slides will then change automatically in synchronization with your comments, being activated by a succession of inaudible pulses. If you want a large high-quality picture, the room light must be low (unless special

screens are available). By placing the projector close to the screen to give the greatest intensity of light from the equipment's bulb, you can show some slides without darkening the room at all.

Filmstrips are a sequence of still photographs on a continuous strip of film 35mm in width.

Most filmstrips can be projected on any projector. The only exceptions are the few filmstrips mounted in cartridges, which always require a specific projector. Projectors for filmstrips are either automatic or manual, sound or silent. Sound projectors have a built-in record player or an audiocassette player. If the projector is automatic, the picture will advance in synchronization with the sound. The signals will not be audible but they are sensed by the projector. If the projector is to be manually operated, you advance each picture in response to a tone provided in the sound unit.

Filmstrips are the least expensive form in which you purchase prepared sequences of still photographs. You can make your own filmstrips if you choose, but it may take far more planning and effort than you feel it is worth. Recording the proper level of sound with your own script and equipment may add up to more working hours than are usually set aside for the project. If it is a particular skill or interest of yours, it can be more readily justified. If not, be sure that you are aware of the costs and prepared to devote considerable time and attention to the product.

Records are a form of sound recorded electronically on a vinyl disc. Records are classified by the rate of revolutions per minute at which they should be played.

Sound on records is more flexible if portions to be presented are "cued up" as a broadcaster does. Selections can lightly be marked with a grease pencil (gentle wiping removes the mark), then set under the stylus to begin exactly where and when you want them. Some dexterity and practice are required, but you will benefit from the control it gives you.

Amplifiers and speakers should be of sufficient power and fidelity to do justice to the material and the size of the audience.

Audiotapes — **are sound recorded on long strips of magnetically coated plastic. They come in widths of 1/8" or 1/4", and play at varying speeds.**

Like records, audiotapes must be played at the same speed at which they were recorded. Almost all tape players will play at 1 7/8, 3 3/4 and 7 1/2 ips (inches per second). 1/4" tape is practically always on reels, which are easily threaded into the players. 1/8" tape is always in a cassette or cartridge, and plays at 1 7/8 ips. The cassette or cartridge player requires no threading, just insertion of the tape container. To spot selections, a player with a counter is essential. Many player units now "cue in" automatically to the beginning of a tape segment in numbered sequence, but they do not "spot" a segment in the middle of a selection. If you are planning to use a counter for a specific portion of sound, try to use the same player for selection and playback, as counters vary widely in accuracy and calibration. Caution: Tape players which also record will *erase* previously recorded sound when in the "record" mode.

16mm Films — **are motion pictures on film 16mm wide. They usually come on a reel, and have optical sound.**

Most 16mm films will play on any 16mm projector. The only exceptions are the very few films with magnetic sound tracks. That does not mean, however, that 16mm films are, without exception, the most flexible or easy to use. 16mm projectors generally do not have fast forward or reverse capabilities. Showing of more than one segment of a film will usually require removing or rethreading the film.

If you are especially interested in using film content as an interactive component to lectures or demonstrations rather than for a continuous run, consider Super 8mm film and videotape alternatives.

Super 8mm Films — **are motion pictures on film 8mm wide. They are sold in reels, in cassettes, and in cartridges. Sound may be either magnetic or optical.**

This is the most economical kind of motion picture, particularly when supplied on reels rather than in cartridges or cassettes. All Super 8mm films on reels will play on any Super 8 projector that accepts reels. However, you must have the correct projector for the type of sound on the film. Although they are slightly more expensive, cartridges have the advantage of preventing damage to the film through mishandling.

Reel-to-reel projectors (silent or sound) usually have fast forward and reverse speeds to permit repeating or skipping. Selection of starting points of content can best be done by placing a slip of paper in the takeup reel when the segment you want appears on the screen. (Be sure to put the slip of paper into the feed reel during rewinding after you have screened the film.)

As a rule of thumb, assume that Super 8 films in cartridges and cassettes will play only in the projector for which the cartridge or cassette was designed. Therefore, if you find a title in Super 8mm that is useful to your course of study, be sure that you know what kind of equipment is available to you before you make your choice. If the selection is important enough for your purposes, it may be well to suggest that the equipment be purchased.

Videotapes are sounds and pictures recorded on strips of magnetically-coated plastic. Tapes vange in width from 1/4" to 2".

For excerpting portions of content for learning, the videocassette strongly resembles a book in motion, because it provides a referability to the subject matter similar to the flipping and reviewing of sections we have when we read printed pages. All players allow you to move backward and fast forward. Some videocassette players also have the capability of "freezing", or stopping, a single image to allow for concentrated viewing, much like studying an illustration in a text.

All videocassette players will accept both color and black and white videocassettes. Color programs will appear in black and white unless the player is connected to a color monitor (television set). Reel-to-reel videotape players will also accept both color and black and white video tapes. But the picture quality of a color videotape played on a black and white system will not be quite as good as black and white videotapes. To see a color tape in color on reel-to-reel equipment, *both* the player and the monitor (television set) must be equipped for color.

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